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EXAMINER

BURGESS, BARBARA N

ART UNIT PAPER NUMBER

2157

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/934,000	Applicant(s) NICK, SASCHA	
	Examiner Barbara N. Burgess	Art Unit 2157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to amendment filed June 6, 2006. Claims 1-6 are presented for further examination. Claim 20 is presented for initial examination (it was unintentionally not addressed in Office Action dated March 8, 2006).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almstead et al. (hereinafter "Almstead", US Patent 6,499,114 B1) in view of Haynes et al. (hereinafter "Haynes", US Patent 4,965,513) in further view of Conway et al. (hereinafter "Conway", US Patent No. 5,608,657).

As per claim 1, Almstead discloses a method for remotely monitoring and diagnosing operations of a machine, the method comprising:

- Detecting signals of one or more of the machine's operating and condition parameters (column 3, lines 6-8, column 4, lines 22-30, column 5, lines 45-49);
- Transmitting information describing each anomaly to a location remote from the machine (column 3, lines 27-32, column 5, lines 34-35, column 7, lines 1-5, 11-15);

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- Diagnosing at the remote location the information describing the anomaly, where the diagnosis includes an initial analysis of the information by diagnostic tools maintained at the remote location (column 5, lines 11-35, column 8, lines 50-65);
- Reporting the diagnosis of the anomaly to a location capable of attending to repair of the machine (column 8, lines 58-65, column 14, lines 43-45).

Almstead does not explicitly disclose:

- Comparing the detected signals to a signal model maintained locally with respect to the machine's location and identifying any anomalies in the detected signals compared to the signal model.

However, in an analogous art, Haynes discloses diagnosing the operating characteristics of electric motor-driven mechanical devices in which electrical signals are analyzed to provide a current noise signature for which various operating characteristics of the device may be observed. The signatures are taken at different periods during the life of the device and may be compared to determine aging and wear or abnormal operating characteristics (column 3, line 20-40, column 6, lines 20-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Hyanes's comparing the detected signals to a signal model in Almstead's method in order to determine aging and wear or abnormal characteristics of the device.

Almstead, in view of Haynes, does not explicitly disclose:

- A subsequent analysis of the information by diagnostic tools maintained elsewhere if the initial analysis fails to provide a diagnosis;

- A final analysis by a team of humans aided by a collaborative environment if the initial and subsequent analyses fail to provide a diagnosis.

However, in an analogous art, Conway discloses a line technician for carrying out diagnostics. Should the line technician be unable to satisfactorily resolve the issue, the problem is communicated to a consulting expert or maybe even a team of experts. The remote parties communicate using data transfer mode to voice mode (column 2, lines 49-64, column 6, lines 50-65).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Conway's subsequent analysis and final analysis in Almstead's method in order that the proper diagnosis of the problem is made.

As per claim 2, Almstead discloses the method for remotely monitoring and diagnosing operations of a machine as set forth in claim 1 wherein the step of detecting signals of machine operating and condition parameters includes continuously monitoring at least one of the operating parameters and the condition parameters (column 4, lines 22-30).

As per claim 3, Almstead discloses the method for remotely monitoring and diagnosing operations of a machine as set forth in claim 1.

Almstead does not explicitly disclose wherein the signal model is a statistical model based on an initial collection of the detected signals.

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However, in an analogous art, Haynes discloses the noise signature frequency being displayed on an oscilloscope and/or recorded on a recording device. At different mechanical gear meshings and shaft rotations, peaks/frequencies can be observed and compared (column 5, lines 22-30, column 6, lines 30-50).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Haynes's statistical model in Almstead's method in order to show the operation of the device at different frequencies.

As per claim 6, Almstead discloses the method for remotely monitoring and diagnosing operations of a machine as set forth in claim 1.

Almstead, in view of Haynes, does not explicitly disclose:

- Including the step of adding the diagnosis to the diagnostic tools maintained at the remote location if the diagnosis is provided by one of the diagnostic tools maintained elsewhere and the team of humans.

However, in an analogous art, Conway discloses a line technician for carrying out diagnostics. Should the line technician be unable to satisfactorily resolve the issue, the problem is communicated to a consulting expert or maybe even a team of experts. The remote parties communicate using data transfer mode to voice mode (column 2, lines 49-64, column 6, lines 50-65).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Conway's subsequent analysis

and final analysis in Almstead's method in order that the proper diagnosis of the problem is made.

As per claim 20, Almstead discloses a method for remotely monitoring and diagnosing operations of a machine, the method comprising:

- Detecting signals of one or more of the machine's operating and condition parameters (column 3, lines 6-8, column 4, lines 22-30, column 5, lines 45-49);
- If the detected signals do not conform to the signal model, then informing a location remote from the machine of an anomaly (column 3, lines 27-32, column 5, lines 34-35, column 7, lines 1-5, 11-15);
- Diagnosing at the remote location the information describing the anomaly, where the diagnosis includes an initial analysis of the information by diagnostic tools maintained at the remote location (column 5, lines 11-35, column 8, lines 50-65);
- Reporting the diagnosis of the anomaly to a location capable of attending to repair of the machine (column 8, lines 58-65, column 14, lines 43-45).

Almstead does not explicitly disclose:

- Comparing the detected signals to a signal model maintained locally with respect to the machine's location and identifying whether or not the detected signals conform to the signal model.

However, in an analogous art, Haynes discloses diagnosing the operating characteristics of electric motor-driven mechanical devices in which electrical signals are analyzed to provide a current noise signature for which various operating

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characteristics of the device may be observed. The signatures are taken at different periods during the life of the device and may be compared to determine aging and wear or abnormal operating characteristics (column 3, line 20-40, column 6, lines 20-30).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Haynes's comparing the detected signals to a signal model in Almstead's method in order to determine aging and wear or abnormal characteristics of the device.

Almstead, in view of Haynes, does not explicitly disclose:

- A subsequent analysis of the information by diagnostic tools maintained elsewhere if the initial analysis fails to provide a diagnosis;
- A final analysis by a team of humans aided by a collaborative environment if the initial and subsequent analyses fail to provide a diagnosis.

However, in an analogous art, Conway discloses a line technician for carrying out diagnostics. Should the line technician be unable to satisfactorily resolve the issue, the problem is communicated to a consulting expert or maybe even a team of experts. The remote parties communicate using data transfer mode to voice mode (column 2, lines 49-64, column 6, lines 50-65).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to incorporate or implement Conway's subsequent analysis and final analysis in Almstead's method in order that the proper diagnosis of the problem is made.

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3. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Almstead et al. (hereinafter "Almstead", US Patent 6,499,148 B1) in view of Haynes et al. (hereinafter "Haynes", US Patent 4,965,513) in further view of Conway et al. (hereinafter "Conway", US Patent No. 5,608,657) and in further view of Lowenstein et al. (hereinafter "Low", US Patent 5,319,513).

As per claim 4, Almstead further discloses the method for remotely monitoring and diagnosing operations of a machine as set forth in claim 1.

Almstead, in view of Haynes and Conway, does not explicitly disclose wherein the detected signals are derived from a plurality of sensors, the method including the steps of:

- Identifying a failed sensor;
- Regenerating the signal model based on remaining sensors;
- Monitoring the machine based on the remaining sensors and the signal model until the failed sensor is repaired or replaced.

However, in an analogous art, Low discloses detecting the inoperation of capacitor cells and fuses. Should either of these be inoperable, a disconnect mechanism is activated and the monitor rechecks the conditions and compares to normal operating conditions. (column 3, lines 35-67, column 5, lines 34-37, column 6, lines 1-5).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Low's identifying a failed

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sensor, regenerating the signal model, and monitoring the machine based on remaining sensors in Almstead's method in order to maintain operation status.

As per claim 5, Almstead discloses the method for remotely monitoring and diagnosing operations of a machine as set forth in claim 1.

Almstead, in view of Haynes and Conway, does not explicitly disclose wherein the detected signals are derived from a plurality of sensors, the method including the step of generating a sensor replacement signal if the identified anomaly is based on a detected signal from a single sensor such that the replacement signal is substituted into the detected signals as a placement for the detected signal from the single sensor and the step of comparing includes the step of comparing the detected signals containing the replacement signal to the signal model.

However, in an analogous art, Low discloses detecting the inoperation of capacitor cells and fuses. Should either of these be inoperable, a disconnect mechanism is activated and the monitor rechecks the conditions and compares to normal operating conditions. (column 3, lines 35-67, column 5, lines 34-37, column 6, lines 1-5).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate Low's generating a replacement signal in Almstead's method in order to maintain operation status.

Response to Arguments

The Office notes the following arguments:

- (a) The Office Action does not address claim 20.
- (b) Level 3 of claim 1 is not taught by Conway.

In response to:

- (a) Applicant's argument has been fully considered and is persuasive.

Claim 20 has now been addressed.

- (b) Applicant's argument filed has been fully considered but is not persuasive.

Conway discloses the line technician (initial analysis at remote location) via an installed interface unable to satisfactorily troubleshoot the downed system, and then communicates with a consulting expert at another remote location (column 2, lines 20-25, 49-55, column 6, lines 50-65).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara N. Burgess whose telephone number is (571) 272-3996. The examiner can normally be reached on M-F (8:00am-4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barbara N Burgess
Examiner
Art Unit 2157

September 1, 2006


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